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A MONTHLY REVIEW OF VETERINARY SCIENCE

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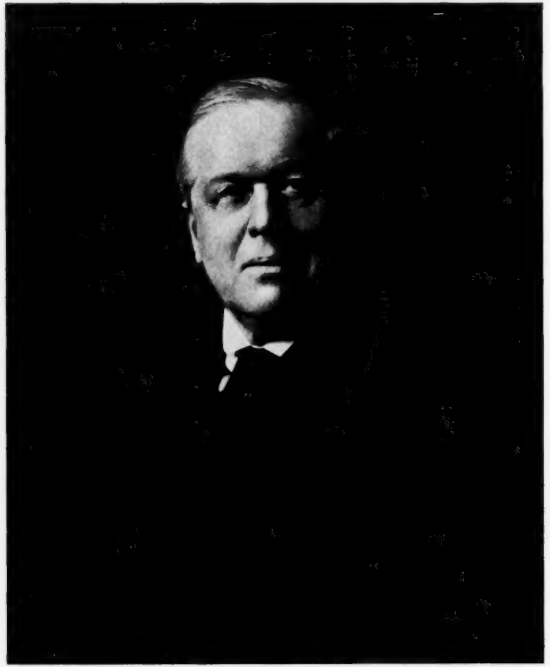
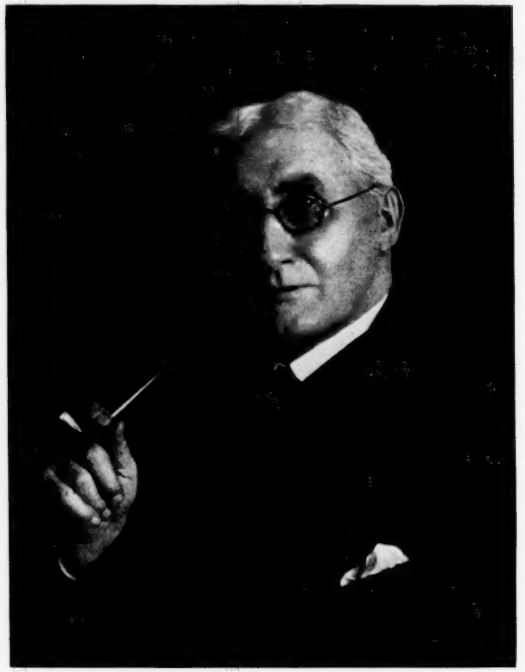


Mr. HENRY GRAY,
graduated M.R.C.V.S., December 10th, 1885.



Capt. JOHN CHARLES COLEMAN,
graduated M.R.C.V.S., July 7th, 1885.

Member of the Council of the Royal College of Veterinary Surgeons since 1914.

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DECEMBER, 1935.

Biography

TWO JUBILEE VETERANS.

IT may not be the ambition of everyone to live to a ripe old age, but no one can resist a thrill of pride and pleasure when one reaches (and successfully passes) the jubilee milestone of one's professional career, and especially if one still possesses the *joie de vivre*, as is the case in each of the subjects of our frontispiece.

Each is well known in the profession, each was a graduate of the same school, and they were classmates together, both graduating in 1885, the only difference being that Mr. Coleman graduated on July 7th and Mr. Gray did not take his diploma until December 10th. In size and build they are almost equally broad shouldered, but the silvery-white hair of the one is in direct contrast to the darker head-covering of the other. Both are well-known practitioners, and each is especially jealous of the rights of members of their branch of our profession. Each can claim successful methods of practice and a large *clientèle*, although in the case of Mr. Gray the fact of living in the West End of London has brought him mainly a canine and small animal clinic; whereas Capt. Coleman's district means horses and cattle and farm animals in addition.

Mr. Coleman was born at Pewsey, Wiltshire, on March 2nd, 1863, his father being a veterinary surgeon of considerable repute in his district and county; and it was to be expected that in such a milk-producing county as this Mr. Coleman would have brought before his notice almost daily the necessity for care in handling dairy cows, and for a clean milk supply. To further this aim has been his life's work, for no man has raised his voice more in favour of milk from tubercle-free herds, whether for children or adults, than Mr. Coleman. So much so that he established clinical classes and demonstrations, at an infinity of time and trouble, for the student graduate to see intradermal and other methods of tuberculin testing, the diagnoses being followed up by post-mortem examination.

A keen believer in the R.C.V.S. motto that " Unity is Strength," Mr. Coleman is a strong supporter of the local branches of the National Veterinary Association, and a life member of the Central Branch. Since the year 1914 Mr. Coleman has been a member of the Council of the Royal College of Veterinary Surgeons.

Mr. Henry Gray, too, had his upbringing in the country, spending most of his early life on a farm, after which he became the pupil of a veterinary surgeon with a very large horse *clientèle* in the East End of London. In those days the College course took only two years, and Mr. Gray entered as a student in January, 1883, qualifying as M.R.C.V.S. on December 10th, 1885; immediately taking an assistantship in a colliery and general county practice at Culverton, near Nottingham, where he stayed for two years, and then returned to London, eventually settling down in Kensington.

Mr. Gray might have become a specialist for operations, but a fascination for the smaller animals—the dog, cat, rabbit and other fur-bearing animals, and for the study of the diseases of birds and fish—soon made him realise that it was in this direction that help was most needed, and in a very short space of time his practice had doubled and redoubled itself again and again.

Mr. Gray belongs to several veterinary societies, and was one of the original founders and staunch supporters of the Comparative Section of the Royal Society of Medicine. He has presented papers to many societies and given many demonstrations, and the secretary who manages to secure Mr. Gray as the demonstrator or lecturer can always ensure a well attended meeting. His facile pen has given much valuable material to the profession, especially in translations from the foreign journals; and the standard work on " Diseases of the Eyes," by Nicholas, has been rendered into English and thus placed at the disposal of the British-speaking veterinary surgeon through Mr. Gray's energy and assiduous studies. Fifty years in one calling is a long way to look back, and the readers of this Journal will congratulate these two gentlemen, and wish them good health and prosperity in the New Year to enjoy the autumn of their days.

Editorial

Our contemporary, *The Journal of the American Veterinary Association*, gives some very interesting data in regard to the numbers of veterinary students in each of the twelve veterinary colleges in the United States. It appears that in that country the shortage of practitioners is much the same as in England, and there is a great dearth of general assistants.

According to the statistics given there are at the present time some 2,198 enrolled in the twelve veterinary colleges; and of these some 19 are doing post-graduate studies—a very small number when the vast size of the country and its large numbers of animals are considered; due largely, as in this country, to the miserably inadequate rate of progression of the salaries offered to those who spend their lives in laboratories endeavouring to find out the respective causes of the various epidemic diseases which cost the agriculturist and stock-owning community millions of pounds annually.

It will be interesting to look back some ten or fifteen years hence and compare the condition of things then with those of the present day.

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General Articles

OBSERVATIONS ON THE EXPERIMENT WITH SPAHLINGER VACCINE IN NORTHERN IRELAND

BY THE

JOINT COMMITTEE OF THE MEDICAL RESEARCH COUNCIL AND THE AGRICULTURAL RESEARCH COUNCIL ON TUBERCULOSIS.

THE Government of Northern Ireland have been making experiments designed to determine the value of Mr. Spahlinger's Vaccine in the prevention of tuberculosis in cattle. The experiments began in December, 1931, and were carried out in conjunction with Mr. Spahlinger by three veterinary surgeons who are members of the staff of the Ministry of Agriculture of Northern Ireland.

Thirty-two calves were used, aged four to six months. Of these calves, 18 were from a tuberculin tested herd of Aberdeen Angus-Galloway cows and 14 from Grade A tuberculin tested herds. Two of the calves were used for a preliminary estimation of the activity of the cultures of tubercle bacillus used for the test dose, leaving 30 for the experiments. Eleven were vaccinated with Mr. Spahlinger's " new simplified vaccine " and seven were kept unvaccinated as controls. These 18 were used in the main experiment. The remaining 12 were vaccinated with four other vaccines, but since in this case the groups were small, the value of the vaccines not regarded as certain, and the results irregular, the results have not been included in this short summary.

The 11 calves vaccinated with the " new simplified vaccine " were divided into four sub-groups of three or two each, which received the vaccine in different ways (intravenously, intramuscularly and subcutaneously) and in the sub-groups each calf received a different sized dose of vaccine. All the 11 vaccinated calves and the seven unvaccinated controls were given the same dose of virulent tubercle bacilli intravenously six months after vaccination.

The difference in the effect on the two groups was striking. Of the seven controls five died of acute tuberculosis within 25 to 73 days ; the remaining two survived in good condition until slaughtered on the 763rd and 879th day after the test dose. On the other hand, none of the 11 vaccinated animals died from the acute form of the disease, and only one died as early as the 607th day, on which date one died with widespread tuberculosis. The remaining 10 vaccinated animals lived until slaughtered on the 783rd–890th day. Of these last, nine were in good condition and one in poor condition.

All the 18 animals were examined post-mortem, and all were found to be tuberculous to a greater or less extent. One of the 10 vaccinated which came to slaughter had a tuberculous udder. In all the 13 animals which survived

to the 607th day, or longer, living tubercle bacilli were found post-mortem, except in one of the vaccinated animals, in which the test for living bacilli was unsatisfactory.

The amount of disease and its apparent activity found post-mortem were varied, and the two control animals slaughtered on the 763rd and 879th days were not very different in this respect from the 10 vaccinated which were slaughtered between the 780th and 829th days.

Comments.

In general, the numbers of animals were not enough to give statistically conclusive results. In detail various points arise :

(1) Since the calves were not tested with tuberculin before the experiment, it is not possible to be certain that none of them was infected at that time.

(2) The test dose was larger but less virulent than that used in some other experiments with which this one might otherwise have been compared.

(3) There is no record of any local or general reaction following the vaccination.

(4) Mr. Spahlinger states it to be an essential feature of his vaccine that it is a " dead " vaccine, but no statement is made about tests used to ensure that the vaccine used in these experiments contained no living bacilli.

(5) It is not stated what tests Mr. Spahlinger applied to ascertain and compare the value of the different batches of vaccine manufactured.

Finally, we consider that more information is required concerning Mr. Spahlinger's system of vaccination before the method could be introduced into practical farming. Besides the need for experience in preparing and testing the vaccine before use, experiments would be required to determine (*a*) whether the tuberculin test interferes with vaccination, as suggested by Mr. Spahlinger ; (*b*) the best dose of vaccine and the best manner of vaccination ; (*c*) the most suitable age for vaccination ; how early in life it is safe to vaccinate a calf ; (*d*) the time after vaccination at which immunity appears and how long it lasts ; (*e*) the persistence of immunity in animals exposed once or repeatedly to infection by natural means, especially whether vaccination early in life would protect under farming conditions at an age when heifers must join the herd, *i.e.*, when they calve for the first time ; (*f*) whether natural exposure to infection, as opposed to an intravenous test dose, would result in only mild or negligible infection, as has been suggested.

Conclusions.

(1) A case has been made out for further investigation, and we are of opinion that a thorough test should be made in this country if Mr. Spahlinger is found willing to supply vaccine in sufficient quantity for the inoculation of a suitable series of animals.

(2) We would urge that until the vaccine has been shown by further and extended experiments to be effective against natural as well as experimental

methods of infection, its practical application should be deferred, and we would deprecate most strongly its enforced general use until a thorough investigation has been made.

J. A. Arkwright (*Chairman*), Merrik Burrell, J. B. Buxton, S. L. Cummins, S. R. Douglas, G. W. Dunkin (*Joint Secretary*), A Stanley Griffith.

N. F. Smith (*Joint Secretary*).

12th November, 1935.

SOME DETAILS OF THE SYSTEM OF HEALTH INSPECTION OF MEAT AND MEAT PRODUCTS DESTINED FOR EXPORT, IN THE GREAT ABATTOIRS OF SOUTH AMERICA.*

By M. T. MORGAN, M.C., M.D., D.P.H.,
Medical Officer, Ministry of Health.

I APPRECIATE the honour and privilege of being invited to give this Benjamin Ward Richardson lecture. Historically, these lectures have acquired the tradition that comes with time. They are a memorial to a man whose conception of public health was far in advance of his period. Benjamin Ward Richardson was impatient of the conditions of life, not only of mankind but also of the animals over whom man exercises control. He realised that the care and attention given to animals destined for slaughter for the food of the people, quite apart from its humanitarian aspects, of which he was an ardent protagonist, was a matter closely linked with the health of the people, and, moreover, one which deserved more attention on its commercial side, being simply a question of good business. He sought by action and through his virile pen an improvement in the deplorable conditions (I am speaking of the period round about 1880) associated with the slaughter of animals and their preparation for food. It is for us to ask ourselves whether the conditions of those times have so materially improved, concurrent with the great progress that has been made in environmental and veterinary hygiene since those days, that we can now be satisfied that, in this direction, all is well in English practice.

The account which I am now going to give of the system of health inspection of meat and meat products in the great abattoirs of South America, emerges from a visit to the Argentine, Uruguay and Brazil which I recently made, during which, in accordance with instructions from my Department, I inspected a number of these large factory abattoirs—they are there known as frigorificos—engaged in the preparation of meat and meat products, destined for export overseas and for local consumption. These frigorificos, or chilled and frozen meat factories,

*The Benjamin Ward Richardson Lecture, 1935, read before the Royal Sanitary Institute.

follow closely the practice which has long been established in the United States. They are, in fact, mass production factories, and their products range from the finest quality chilled beef destined for the English market, to every variety of by-product, ranging from agricultural fertiliser to the buttons which keep our clothes about us.

You will realise that a system of centralised slaughter, preparation, and distribution is one which is very different from our English practice, with its innumerable small privately-owned slaughter-houses. It eliminates in a single stroke most, if not all, the defects associated with the small " individualistic " abattoir ; raises the control, from the hygienic standpoint, of the animals and their products to a point of efficiency quite impossible of attainment in any decentralised system ; and eliminates the waste of good and valuable by-products, which is so unfortunate a feature in England.

All the frigorificos I saw are built and conducted on the same plan. From a bird's-eye view they consist of a compact block of buildings, very much like a large box, with a long ramp or race rising from ground level to the top floor. The animals destined for slaughter are driven up this race, are slaughtered and dressed on the top floor, and the products from that process gradually descend from floor to floor until they finally emerge on the ground floor either as chilled or frozen beef, mutton or pork, or a canned equivalent, or as edible offals of various kinds, either frozen or canned, dried or pickled, or other by-products such as edible and inedible fats, bones in various forms, or what might be called " final products," such as dried blood, meal, etc., destined for a hundred-and-one uses.

As to the size and the output capacity of these factories—they vary, of course, but the largest of them have to the British mind a production which can only be described as gigantic. In Rosario, for example, in the Argentine, there is a large and modern frigorifico, belonging to Swifts, the maximum output of which is as follows :

Twelve thousand cattle killed per week, of which about 3,000 are chilled for export, 1,000 are consumed locally, and 6,000 are sent to the canning rooms. 3,000 hogs and 200 sheep are killed per week. 300,000 lb. of meat are canned per diem, of which 60,000 will be second grade. 120,000 12-oz. cans are filled and 15,000 6-lb. cans are filled per diem. 120,000 lb. go to the tank house per diem, of which 20 per cent. becomes tallow. 24 tons of fertiliser. 60 tons of raw fats, of which 35 tons will become edible fats, are made per diem. 5,000 lb. of beef extract are made per diem, of which 20 per cent. is second grade. The number of persons employed in the frigorifico is 2,300.

The products of these factories are not restricted to the export trade ; they supply the local market with fresh and preserved meats.

A word as to the material. In South America the Argentine produces the finest quality meat ; Uruguay produces a slightly inferior quality ; and Brazil produces what I will call a special quality, for reasons which I will explain in a moment. The Argentine, the fertility of which can best be described by stating

that not one ounce of fertiliser for the production of foodstuffs has ever entered the country, purchases the finest breeding stock of British cattle, sheep and pigs that is raised. If you go to the more important cattle shows of Great Britain you may be almost certain to find, at least until recent years, that the prize bull and the prize heifers have been purchased, often at fabulous prices, by a breeder in the Argentine. These beasts exported to the Argentine produce their kind in what is a veritable bullocks' paradise—great stretches of alluvial plain growing thick lush grass and lucerne. The land grows this stuff year after year without need for replenishment of the soil. The cattle are never under cover from the time they are born until the moment when they mount the long race to the killing-pen. Herefords, Shorthorns, Aberdeen Angus, Redpolls, are all to be seen in the Argentine, but particularly the Hereford, acknowledged to be the finest " beefer " in the world. Thanks to this " food of the gods," they are fit for slaughter at two to two-and-a-half years old. I saw a number of herds at the ranches and in the corrals resting before slaughter, chiefly Herefords and Shorthorns, each animal looking exactly like his neighbour to the extent that they might all have been stamped out of a machine, in perfect condition and the finest of their kind. Each beast of about five hundred kilograms weight (what is called " baby beef ") is sold on the hoof at a price averaging twelve pounds. It is wonderful, but it is sad, for how can the British farmer attempt to compete with these Arcadian conditions ? Uruguayan cattle are generally a cross breed, chiefly between the Hereford and the local native breed. They have the hindquarters of the Hereford and their white foreheads are distinctive, but they have long horns, which are a source of considerable trouble and damage in transit and in herding. The conditions in Brazil—the hot climate, lack of water and the need for special pasturages for fattening, together with a greater tendency to cattle disease, render the greater part of the country unsuitable for pure-bred English stock. The result is that the raiser has had to rely either on the local breed, known as the Caraicu, or on a strain imported from India known as the Zebu, an animal which is highly resistant to tick fever, which produces a good quality hind-quarter beef, but which is useless for the English market as regards its fore-quarters on account of the hump.

System of Inspection.

I now turn to a brief description of the system and service of health inspection in the frigorificos before giving you an account of the passage of animals through the various stages in the slaughter-house. The system is the same in all three countries, but it is most highly developed and best seen in the Argentine. I will therefore limit my description to the conditions of the service in that country. The service of inspection of meat and meat products is a special branch of the State service of inspection of livestock, including fisheries ; the same applies in Uruguay and Brazil as regards meat destined for export. It is a veterinary service, and not attached to the public health service as in this country. Veterinary surgeons are required to undergo a period of training in a State veterinary

school, and then to pass an examination, and a stiff one at that, in the various branches of veterinary hygiene and medicine associated with the livestock industry. The head of the service is a highly-placed official in a ministry equivalent to our Ministry of Agriculture. Immediately under him there are a certain number of inspectors in charge of the stock-raising districts. The next grade is the veterinary officer in charge of the frigorifico, to whom are attached one or more qualified veterinary inspectors according to the size of the frigorifico. The next grade consists of a corps of inspectors known as " ajudantes," or assistants. They are young men, not in possession of a veterinary diploma, recruited from among the more intelligent members of the staff of the frigorifico who have been engaged for some time in the slaughter and processing of the meat and who have shown a special aptitude in their work. They are required to undergo a course of about six months in the elements of veterinary hygiene and pathology, and then become State officials.

Now it will be clear to you that to carry out an efficient inspection throughout all the frigorificos in the Argentine, and the same applies to the two other countries, would entail a huge staff of veterinary inspectors and ajudantes which the Government could ill afford to pay out of national funds. They have therefore done what I think is a rather clever thing. They have said to the managements of the frigorificos : " You must furnish us with a certain number of your staff, which we will pick according to their experience and intelligence, to assist us, as much in your interests as in ours, in our inspection of your products in order to ensure that they are healthy, of good quality, and fit for the high-class trade for which they are destined. You will pay them and they will be enrolled on your books, but they will be entirely under our orders and will carry out such work as we allot to them during the time that they are employed on this inspection." These men are called " auxiliaries," or helps, and they are employed in the routine inspection of the simplest kind, such as the examination of the heart and liver and of the mediastinal and mesenteric glands, which are very easy to find and which, being detached from the carcase, can be cut about without doing harm to the appearance and form of the carcase itself.

The more delicate and responsible examinations, *e.g.*, inspection of the glands of the carcase, cervical, retropharangeal, precrural, iliac, etc., are generally made by the ajudantes. These men gain their experience by constant hourly and daily repetition in the examination of one individual organ to the extent that they come to know almost instinctively what is abnormal in appearance and feeling. They are not asked to make a diagnosis (other than perhaps in the broadest category), but merely to indicate, for the benefit of the veterinary inspector who makes the final inspection, that there is something in an organ or part of a particular beast which does not appear to be normal.

This, then, in its broadest outlines, is the system of inspection, and its way of working will be made more clear to you by the following paragraphs, which will attempt to describe the passage of an animal before, during and after its slaughter, through the frigorifico.

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FIG. 1.—Animals passing through a bath and shower before mounting the race to the slaughtering and dressing floor.

FIG. 3.—Inspection of the tongue—incising the sub-lingual glands

(*Article by* M. T. Morgan, M.C., M.D., D.P.H., *page* 509)

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Ante-mortem Inspection.

When a cattle buyer wishes to move his cattle from his ranch he must make an application for a certificate to the State veterinary officer of the distict, who calls at the ranch and inspects the animals for their health. The veterinary officer must inspect and certify the stock free from disease, and stock arriving in one of the frigorificos must be accompanied by the necessary certificate of freedom from disease issued at the point of origin. The certificate is valid for two days only; failing this certificate, the veterinary inspectorate will not accept the animals for export, and they will have to be either killed and perhaps approved for local consumption or returned to the ranch. The cattle are then driven to the nearest station for loading on railway trucks or on river boats. The transport arrangements are under the supervision of a special branch of the veterinary inspectorate. The type of truck favoured is the heavy bogey truck, opening at both ends, there being a flap across the end of the truck which falls down and so makes contact with the adjoining truck. The average number of cattle is eighteen to twenty head per truck, and when the end flaps are let down and the trucks are joined up, a continuous long corridor is formed, along which the animals can pass in safety. The number of trucks range from twenty to thirty per train.

On arrival at the frigorifico the animals are turned out of the trucks into an observation yard, where they undergo a further inspection by one of the veterinary inspectors attached to the frigorifico. On being accepted as fit for killing they pass over the weighbridge and are then led to the corrals, where they remain for the necessary period of rest.

The animals are again under observation during rest by the veterinary inspector and his assistants, with a view to detecting any animal which may be developing sickness, and particularly for any signs of foot-and-mouth disease. Herds in which foot-and-mouth disease, anthrax, or any other communicable infection have been found, are promptly isolated in corrals set apart for the purpose.

Finally, a certificate is given by the veterinary inspector permitting the animals to be slaughtered. The period of rest while in the corrals is seldom more than twelve hours, and in this case the animals are merely watered and no food is given. If they are kept for a longer period they are given a feed. In certain frigorificos the corrals are merely wooden rails built on bare earth suitably drained. In others they are cemented over, the cement being finished off with a number of ridges designed to prevent animals slipping and falling.

This completes the ante-mortem inspection, and we can now proceed to the killing and dressing and post-mortem inspection.

Slaughtering, Dressing, and Post-mortem Inspection.

Early in the morning, usually about 5 a.m., the animals are driven up the race to the top floor of the frigorifico, where the killing and dressing-floor is situated. In some frigorificos they are driven through a bath of cold water

and soused by a shower before proceeding to the ramp in order to cool them and keep them quiet. The cold douche has also the advantage of contracting the peripheral vessels and driving the blood to the larger vessels, thus rendering bleeding more rapid and thorough.

Driven up the race (the cowboys are not permitted to strike or goad the animals, nor employ dogs, but may make use of an electric prod), the animals arrive at the slaughtering alley. This is a narrow passage admitting the animals in single file, leading to what is known as the "knocking pen." An animal having entered the knocking-pen, the door, in the form of a bascule, drops behind it and it becomes imprisoned in the pen. The knocker stands on a platform above the pen, and when the animal presents its head in a suitable position he swings his long-handled sledge-hammer with considerable force to strike the animal on the forehead. I confess that I was greatly impressed by the extreme accuracy of the knocker, who on no occasion when I saw him failed to fell his animal and render it profoundly unconscious at the first blow.

When the animal has fallen, a lever is pressed which raises one side of the pen and tilts the floor. The animal slides out of the pen, and wall and floor resume their position. The stunned animal is sluiced with water, a chain is fastened round its hind legs, just above the hooves, and is hoisted and transferred to a roller running on a conveyor rail beneath the roof, whence it passes to the place where it is to be bled. Bleeding is carried out by slitting the throat longitudinally and opening the aortic arch. In the majority, but not all the frigorificos, there is a partition reaching just above the beast's mouth, so arranged that as the animals move along, the ingesta from the stomach, which are often discharged as exsanguination takes place, falls on one side of the partition while the blood gushes out the other side. This plan has the advantage of avoiding the risk of contamination of the blood and the consequent deterioration in its value as a commercial product. The ejecta flow down a pipe to the digestor floor below, while the blood is led down a separate pipe to the drying machine. It may be interesting to note here that blood is an important component in the manufacture of a great variety of articles, ranging from soups, sausages and other forms of food, to fertilisers and gramophone discs. Bleeding is completed in one or two minutes, and at the end of this stage a veterinary inspector or assistant is stationed to make a further and final examination of the hooves and mouth for foot-and-mouth disease. The animal's head is then skinned and disarticulated, but remains attached to the body by a tag of skin at the neck. The carcase is then lowered on to the skinning cradle.

Skinning is certainly the most delicate and highly-skilled of all the operations, and the flayers are among the most highly-paid men on the floor. It is wonderful to see the man with his small, curved knife, razor sharp, detach the hide from the subcutaneous fat with the minimum number of smooth, clean strokes. If he makes one slip, or if his stroke is jerky, he may enter the true skin and so diminish the value of the hide as a whole. After the hide is detached from the belly and flanks, the animal is again raised on to the conveyor for the final skinning

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of the back. The hide, now completely detached, is spread out on the floor, and an inspector examines it for blemishes. If blemishes are due to the flaying, the flayer has a fine imposed on him in regard to that hide. The animal, after flaying, is again raised to the moving chain, and passes along for further treatment.

At this moment the head is removed from the body and placed on a tray, in some cases a moving platform, for veterinary inspection. The first inspector seizes the tongue and scrapes the sides with the back of his knife to ascertain if there is any evidence of aphthous disease. The next inspector examines the submaxillary glands and incises the cheek muscle to look for evidence of cysticercus infection. If nothing is found, the head passes on for disarticulation of the lower jaw and for the crushing of the skull and removal of the brain.

The height at which the carcase is suspended is so adjusted that all the operations on the moving carcases are performed by men standing on a raised platform. In this way the risk of soiling the carcase by blood, etc., on the floor is avoided ; also the men can work more easily and keep clean. The animal is eviscerated in two or three stages, one man performing each stage only. The stomach and paunch are removed and slide down to a sub-platform, the apron being dropped down a shute to the lower floor, whence it goes to the mincer to be rendered into edible fats. It is fascinating to watch the dexterity with which the men perform each stage in the process of evisceration. Everything is so perfectly co-ordinated that there is the minimum of handling of the viscera and of the carcase during the process. The intestines with the mesentery attached are sent to one or two inspectors for the examination of the mesenteric glands. If these are found to be diseased, a coloured metal tag, corresponding to the particular disease found, is attached to the carcase. Another inspector examines the liver for inflammation, for cysts, hydatids, etc., and if anything is found the liver is rejected and the appropriate tag is attached to the carcase as it moves along. Another inspector examines the lungs and heart, and particularly the mediastinal glands. By this time the carcase has been completely eviscerated and is now split longitudinally in half by means of an electrically-driven saw. This section or splitting of the carcase is another highly-skilled operation, since obviously any slight deviation from the central line will detract from the value of the finished product. The carcase is now washed and wiped with steamed cloths to remove all traces of blood inside the body cavity and on the surface. Next comes the inspection of the glands of the carcase, and this is done by two, three, or even more inspectors, the glands being divided up into groups—prescapular, precrural, ischiatic, etc. The examination is very neatly done. In the case, for instance, of a prescapular gland, a neat incision is made over the spot where the gland is to be found, the gland is protruded through the incision and itself incised and if it is normal put back into its cavity. The examiners do not finger the carcase, but use a knife in one hand and a hook in the other. If the gland is found infected, a wooden skewer is passed through it to keep it displayed, and a coloured metal tag is placed on the carcase according to the particular infection encountered.

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Next comes a supervisory inspection by one of the qualified veterinary inspectors, who looks for the glands previously examined by his assistants and makes a general inspection of the pleura and peritoneal linings. If he finds evidence, for instance, of tuberculosis, or if tabs are attached to the carcase showing that there has been an infection of the viscera, he either passes or rejects the whole or part of the carcase, one or both sides, according to circumstances. Should he reject the carcase, it is switched off on to a side rail, cut down, and carted away to the crusher, thence to the digester to be rendered for manure. In the meantime, the healthy carcases pass on to undergo a final veterinary inspection carried out by a senior veterinary officer, who marks each quarter with a stamp bearing his individual number before handing the carcase over to the grader, who grades the carcases according to their quality. After a final wipe down, the carcase is marked, provided it is for export, by a rotary stamp, with the name of the country of origin, in compliance with the recent Merchandise Marks Order (Imported Goods, No. 7, 1934).

Canning and Other By-Products.

It goes without saying that only a proportion of the kill reaches the high quality and standard necessary for the export market to Great Britain. A certain amount is, of course, reserved for chill or freezing for other European countries, but apart from this the rest passes to the canning department, unless destined for sale to local retailers. The fact that a carcase is rejected for the chill-room does not necessarily mean that the eating quality of the beef is inferior ; it merely means that the carcase may not be of the size or shape or have the outward appearance which is acceptable to the butcher trade or the consumer in Great Britain. The quality of the beef may nevertheless be just as good. Carcases for canning pass to a lower floor to the boning room. There the carcase is disarticulated and, as the name implies, the flesh is removed from the bone. This is a highly skilled undertaking, and it is extraordinary to see the agility and rapidity with which an experienced cutter will, by a few strokes, remove twenty or thirty pounds of flesh from the shoulder or haunch or ribs. The meat is graded, and then passes to the mincer, which chops it into morsels ready for the cooker. The morsels are cooked for twenty minutes in open vats and are then ready, after straining, for canning. The soup from the cooking, which is a thin, straw-coloured liquid, is led by pipes to the extracting-room, where it simmers in large vats, passing through various stages until it becomes the well-known beef extract.

The pieces of meat, tons at a time, pass down a chute to the canning department. It is carefully graded, pieces of gristle, aponeurosis and such like are removed, and the bulk fed by hand into the hopper of the filling machine. The containers for this type of bully beef are of various sizes ; by far the commonest being the twelve-ounce size. These little wedge-shaped cans are too well known to need description here, particularly to those who lived with and on them during the War.

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The larger tins of bully beef and the tins containing brisket beef, tongues, etc., are packed by hand and sealed and soldered by machines operated by hand. Most firms manufacture two grades of canned beef, the grade merely representing the quality of the beef; that is, the part of the carcase from which it is taken. The texture of the beef and the fat contents depend on the taste of the country for which it is intended. Some countries prefer a lean bully beef, others a grade with a higher fat content. That for the English market, I understand, generally contains about 15 per cent. to 18 per cent. of fat. The tins, after having been spot soldered *in vacuo* pass to the sterilising room, where they are raised in autoclaves to a temperature of 110° C., which is maintained for about two hours. It is during this process that the bully beef acquires its characteristic taste. I was informed that there is a fortune awaiting anyone who can invent a process whereby the normal taste of freshly-stewed beef remains unaltered after autoclaving. In the boning, boiling and packing-rooms, as elsewhere, I was struck by the exceptional cleanliness of the floors, walls, etc., of the machinery and of the personnel. The men and women are clothed in white overalls and wear white caps, and in some of the frigorificos one or more manicurists are stationed permanently on the floor to attend to the fingers and nails of the employees handling the meat. Any person with cuts or infections of the hand is temporarily removed from the floor and employed elsewhere.

On removal from the autoclaves and after cooling, the tins are lacquered in the lacquering machine and then go to the labelling and packing-room. The labels are put on by hand by girls whose fingers work faster than the eye can follow. The tins are then cased and sent down to the dispatch-room for shipment.

This description will suffice to give you an idea of the system of inspection. The system is a ruthless one, and whole carcases or sides or portions of viscera are rejected on the slightest grounds of a suspicion that they are unhealthy or unsuitable for human consumption. But here one must make a difference between export to Great Britain, export to other countries, and consumption within the country. Material destined for export to Great Britain is only accepted by the inspection service when it is found to be absolutely healthy without any trace whatever of disease. I do not mean to say that a single enlarged gland in an otherwise perfectly sound carcase would condemn it for the British market, but if the gland were considerably enlarged, the service, and indeed the frigorifico managment, would prefer to send the carcase to the canned beef department or to sell it locally rather than to send it direct to England. The same applies to hogs, and the same applies to sheep. In the former the only serious disease is tuberculosis, and owing to the severe standard required by our Ministry of Health very few sides are shipped as such. They chiefly come over in the shape of hams and backs. In the case of mutton, which as you know is extraordinarily free from disease, the only criterion apart from quality is the presence of caseous lymphadenitis. The slightest trace of lymphadenitis in a lymphatic gland in the carcase is sufficient to condemn that carcase for the English market, but it is

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good enough for the European market, which is not so fastidious, and it is quite good enough for the local market. In England we can afford to refuse such carcases, since we are the best customer and can insist upon having the cream of the trade.

In conclusion, I want to impart to you an impression and a feeling which increasingly developed within me during the course of my inspection. In the Argentine, and in Uruguay and Brazil also, I was struck by the extraordinarily high standard of the service of inspection, and by the extreme cleanliness and the wonderful machine-like efficiency of these enormous factories, in their every department.

But, above all, was I struck by the astounding, almost, would I say, inconceivable potentialities of these countries for the production of meat, particularly beef, of the very finest quality, young, living in the open under the healthiest conditions, feeding in a veritable Garden of Eden, cared for like young children, and finally killed and prepared under ideal hygienic conditions, with an inspection which, as I have said before, is ruthless to extent of rejecting good food solely on the grounds of a suspicion.

In justice to these countries one must say that they are producing a quality of beef that is unexcelled, and they can export a product which should in itself be a stimulus to this country, whence came the best breeding stock, to promote better conditions for its own trade and to produce the same quality for the local market.

ADDRESS DELIVERED AT THE SILVER JUBILEE CELEBRATION OF THE SYDNEY SCHOOL OF VETERINARY SCIENCE, AUGUST 26, 1935

By Professor J. DOUGLAS STEWART, M.R.C.V.S.
Dean of the Faculty of Veterinary Science.

ALTHOUGH the Faculties of Agriculture and Veterinary Science came into being at the same time, it so happened that the Dean of the Faculty of Veterinary Science was appointed before the Dean of the Faculty of Agriculture, and it therefore becomes my privilege to make the first response on this auspicious occasion of our combined Silver Jubilee celebration. The two faculties have much in common, and as my esteemed colleague, Professor R. D. Watt, is to address you later in the evening, I intend to speak purely on behalf of the Faculty of Veterinary Science. To do so I am to be allowed twenty-five minutes, or one minute for each year of the life of the School, which is obviously quite insufficient to do full justice to the Faculty.

In the first place I desire to thank you, Mr. Chancellor, most sincerely for the generous manner in which you have conveyed to us the congratulations and good wishes of the University on this notable occasion, and I assure you, Sir,

that your eulogistic references to the achievements of the Veterinary School during the past twenty-five years will act as an incentive to the Faculty to show at its full jubilee a still better record of service and progress.

It is meet and proper, Sir, that advantage should be taken of this opportunity to express the thanks of the Faculty for all the University has done to place veterinary education on a proper basis in Australia. In this connection some reference should be made to our indebtedness to the late Sir Norman MacLaurin, who was Chancellor when the University was approached by the Government to create a Chair in Veterinary Science. This grand old man of the University, guided by his medical knowledge, his wide interests and his long-range outlook of the affairs of the State, strongly supported the Government's proposal and took so active an interest in the establishment of the School that we will always revere his memory. I should like also to record my indebtedness to the late Sir Thomas Anderson Stuart for the wise counsel he gave me and which was largely based upon his own experience in establishing the Medical School. His advice was always helpful, even if at the time its adoption might not have been deemed expedient.

To the various administrative and executive officers of the University I have to express the thanks of the Faculty for their unfailing courtesy and sustained interest in our affairs, and I have also to record our great appreciation of the assistance given to us by the professors and lecturers of other departments in developing and providing for the teaching of the curriculum in veterinary science. It is felt, Sir, that our esteemed colleagues have every right to participate in the congratulations conveyed to us this evening upon the success of the Veterinary School.

We greatly appreciate all that has been said by the Ministers of Education and Agriculture, and feel that it is also our bounden duty on an occasion such as this to thank the Government for all it has done to promote veterinary science. It has subsidised the University, provided the main building of the Veterinary School and placed on the Statutes the Veterinary Surgeons Act, for all of which we are truly grateful. We have always felt that the Government fully realises the importance of encouraging veterinary science, and that if our applications for further assistance have not been immediately granted, they at least have been sympathetically received. The felicitations conveyed and the goodwill expressed in the messages received from so many eminent persons and from various important public bodies, which have been read by the Registrar, are naturally a source of great pleasure to the Faculty. The interest manifested overseas in the welfare of the Sydney Veterinary School is very gratifying, and it would appear that our graduates who have visited centres of learning in other countries have made an excellent and lasting impression.

In the souvenir brochure which has been distributed, specific reference has been made to our benefactors, and we wish to publicly acknowledge our great indebtedness to all who have so generously assisted in the development of the

Veterinary School. To the Pastures Protection Boards we record our sincere thanks for their generous subsidy of £1,250 per annum to improve our methods of teaching nd to encourage research. The Boards came to our assistance when the rapidly developing School was in the throes of growing-pains and the University was unable to give relief owing to the stringent financial conditions that had arisen. The active interest the Pastures Protection Boards have taken in the Veterinary School and in its graduates is indeed greatly valued. The Royal Agricultural Society of New South Wales has also been a good friend to the Veterinary School; not only does it provide a scholarship to enable selected holders of the diploma of the Hawkesbury Agricultural College to proceed to the degree of Bachelor of Veterinary Science, but it grants many privileges to our students. Further, to commemorate this Silver Jubilee the Society has presented the School with a steel cabinet for the preservation of typical fleeces of our various breeds of sheep. To the Walter and Eliza Gall Trust we are specially indebted for the founding of a Fellowship which has been of inestimable value in promoting research for the solution of problems of economic importance to Australia. To the members of this Trust, and to all other benefactors, we tender our grateful thanks for the assistance and encouragement they have given to us.

In considering the development of the Veterinary School, it is material to appreciate the fact that while the official age of the school is twenty-five years, its effective life is of much shorter duration; in fact it is only within the past ten years that the Veterinary School can be regarded as having functioned fully. In establishing a new school teaching a science about which much misunderstanding prevailed, there were naturally many inherent difficulties to be overcome. Chief among these difficulties was the popular misconception as to the true nature of veterinary science. Many people had come to regard the horse as the one and only animal requiring veterinary attention, and consequently viewed the advancement of motor traction as a distinct menace to the future of the veterinary profession. In doing so they quite disregarded the fact that veterinary science has a much wider application and that its chief objective is to protect an important source of our national revenue by safeguarding the health of our flocks and herds. It is estimated by the Commonwealth statistician that the annual value of production from the livestock industries in Australia exceeds one hundred million pounds, and if the value of our secondary industries dependent upon animal products were added to this sum, the aggregate amount of our revenue derived from animal sources would be seen to be very great indeed. The livestock industries form the economic pyramid about which Australia has built her prosperity, but this pyramid can only stand so long as our flocks and herds remain healthy and produce to the full. One might well ask what would become of our commerce if scabies devastated our wool industry and foot-and-mouth disease decimated our herds. Unfortunately, as it is, we have more than enough diseases to contend with, as their depredations exact a heavy annual toll. Realisation of this fact has led to the establishment of a number of veterinary research

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institutions, some controlled by the State, others by the Commonwealth Government through the Council for Scientific and Industrial Research, and of particular importance to us is the McMaster Laboratory of Animal Health which is closely linked up with the Veterinary School. In addition, the States have increased their veterinary control with the result that many of our graduates have become absorbed in various public services as administrators, research workers or field officers ; and the good work they have done has led to much of the misconception and misapprehension as to the uses and value of veterinary science being replaced by a fuller knowledge and better appreciation, so much so that the demand for graduates has exhausted the available supply. The acuteness of this position has been added to by the increasing demand for practitioners in country districts and by the new avenues for employment of veterinary knowledge that are continually opening up. As a result the Veterinary School has made rapid growth during recent years, there being now over one hundred students in attendance, including twelve women undergraduates. There is every reason to believe that this rate of growth will continue, especially as the Sydney Veterinary School is now the only institution of its kind in Australia and has in attendance students from all States of the Commonwealth as well as from the Dominion of New Zealand. Consequently, the future may be regarded as bright and the establishment of the School as having been successfully achieved. Eulogistic reference has been made to my services in this connection, and while I greatly appreciate all that has been said, I must confess that all that was planned twenty-five years ago has not yet been attained. We still have but one endowed Chair in the Faculty, and our teaching staff is still below its proper numerical strength. The Veterinary Hospital has yet to be built and a farm has yet to be acquired to adequately provide for essential practical training. It may have been rather optimistic to have taken the extensive, well-staffed and richly endowed veterinary schools of Europe as a model, but when one learns that the sum of £300,000 has recently been provided, partly by Government grant and partly by private subscription, to rebuild the Royal Veterinary College of London, there does appear to be food for reflection. Obviously we as a people are not yet sufficiently veterinary minded. Nevertheless, definite progress has been made, the credit for which is not solely due to my personal efforts, as I have always enjoyed the whole-hearted co-operation of others. I am still very mindful of the help given during the early days of the School, when instructors in veterinary subjects were few and far between, by those who accepted, often at much personal inconvenience, temporary appointments to enable the classes to be carried on. The difficulty in obtaining suitable instructors in past years was a very real one, but in the course of time a teaching staff has been built up gradually of which we are justly proud, more especially as all its members are graduates of this University. The loyalty of the members of our teaching staff is only equalled by their great keenness in developing their special subjects, and I gratefully acknowledge the enthusiastic help I have always received from my colleagues. Further, when our students

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graduate they do not grow away from the Veterinary School, but always maintain an active interest in our welfare. Some have brought great credit to us by gaining high degrees both in this and in other British Universities, while several have carried out research of outstanding merit that has led to new methods in the control of certain diseases and thus effected a saving of millions of pounds to the pastoral industry. One could in fact mention but a few names and assert with confidence that if the Veterinary School had done nothing more than trained these particular men, it would have fully justified its existence. I should like also to pay tribute to the veterinary graduates of the Melbourne University, many of whom have made valuable contributions to our knowledge and done much to advance science generally. Ever since the Melbourne Veterinary School ceased to function, its graduates have supported unreservedly the Sydney School, and we greatly appreciate their co-operation. Taken as a whole, the graduates in veterinary science have proved a wonderful asset to Australia, and as the number of our undergraduates constitute a potential force for further advancement, the Faculty faces the future with every confidence.

I am at a loss to know how it is possible to suitably acknowledge the encomium showered upon me by Dr. Clunies Ross, or to adequately express my thanks to the members of the Faculty for the magnificient souvenir of this celebration they have presented me with. Needless to say, I feel overwhelmed, and I am sure you will agree that even if my past services were worthy of only a portion of this magnanimous recognition, I still would have cause to be embarrassed. My great reward has always been found in the progress of the school and the success of its graduates, but this magnificent gift certainly gives me great pleasure. I should like to compliment the selectors upon their excellent choice, especially as the gift will also give much pleasure to my wife. No doubt there are many in the audience this evening who will agree that the wife of a professor or lecturer has to make many sacrifices for the benefit of the University. Not only is she often subjected to vexatious disappointments owing to the exacting nature of her husband's duties interfering with social engagements, but she is also frequently submitted to the harassing ordeal of listening to long discourses on most uninspiring subjects. Consequently, on occasions such as this, it is proper that one's wife should participate in the pleasure. I therefore, on behalf of Mrs. Stewart and myself, must sincerely thank the Faculty for its generosity and assure its members that we value highly the sentiments which accompany this gift.

The intention of the members of the veterinary profession in Australia to commission Mr. Norman Carter to paint my portrait has come as a surprise, and I will reserve my special thanks for this general expression of appreciation of my past services in promoting veterinary science until the occasion of the official unveiling of the portrait, which I understand is to take place at the Veterinary School on some future date.

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VETERINARY STUDENT ENROLMENT FOR 1935-1936.*

REPORTS received from the deans of the twelve veterinary colleges in the United States and Canada indicate a further increase in the enrolment of veterinary students for the current college year. The increase of 332 students this year is slightly in excess of the increase of 316 reported one year ago. It should be kept in mind that the figures contained in these annual surveys, beginning with the college year 1932–33, include so-called pre-veterinary students in some of our educational institutions. In the following analysis of the present situation we will attempt to give due consideration to this fact in order that erroneous conclusions may not be drawn.

According to the reports, there are 2,198 students enrolled in the twelve veterinary colleges. Of this number 19 are graduate students pursuing post-graduate studies for advanced degrees in most cases. These graduate students are veterinarians and, of course, when they finish their present studies, they will not increase the total number of graduate veterinarians. This fact would reduce the number of potential new veterinarians to 2,179.

In the accompanying table, seven veterinary colleges are credited with having 369 special students. The reports indicate that 338 of this number are students enrolled for the so-called pre-veterinary year, leaving 31 others to be accounted for. These students are irregular in that they cannot be definitely classified as belonging to any particular class—freshmen, sophomore, junior or senior. However, these 31 students are candidates for the veterinary degree and should be added to the 1,810 students enrolled as freshmen, sophomores, juniors and seniors, making a grand total of 1,841 students who may be expected to complete the work for the veterinary degree within the next four years. More than one-third of the total are to be found in the freshman class. Here we have 668 students, as compared with 572 freshmen a year ago.

It is rather interesting to note that although there were 572 freshmen reported from the twelve colleges last fall, these same institutions report only 480 sophomore students this year. It would appear that almost a hundred students who started the study of veterinary medicine one year ago have either discontinued these studies or were unable to keep up with the work of their class. One year ago there were 307 sophomore students reported, and this year the number of junior students is 332. Likewise, a year ago there were 309 junior students in the twelve colleges, whereas this fall these same institutions report 330 seniors. These apparent discrepancies may be accounted for in quite a variety of ways. One that would probably account for the greatest number is in connection with so-called irregular students of past years who this year are definitely assigned to one of the upper classes. Transfers of students with advanced standings, or

* This statement, by the Editor of the *Journal of the American Veterinary Medical Association*, of the student statistics in the Colleges of the United States is especially interesting at the present moment to compare with the condition of affairs here in Great Britain.

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students who were not in college last year but who have returned to resume their studies this year, explain some of these increases.

It will be noted that the number of seniors this year is considerably below the number reported for 1934–35. Note, too, that the number of junior students is approximately the same as the number of senior students. The figures for these two classes would indicate that we can expect about 300 graduates in 1936 and about the same number in 1937. There were 363 in 1935.

All of the foregoing comments have been made on the situation as a whole and without any attention being given to the state of affairs in each of the twelve colleges. It should be kept in mind that six of these (Colorado, Cornell, Iowa, Kansas, Michigan and Ohio) are now on the so-called five-year basis, that is, these institutions require a year of pre-veterinary work for entrance. In all of

VETERINARY STUDENT ENROLMENT FOR THE COLLEGE YEAR 1935–1936.

	Fr.	Soph.	Jun.	Sen.	Spec.	Grd.	Tot.	1934–35	Chg.
Alabama Poly. Inst.	78	34	36	33	0	0	181	115	+66
Colorado State Coll.	42	19	13	18	64*	0	156	120	+36
Cornell University	39	32	33	26	0†	6	136	163	—27
Iowa State Coll.	55	56	31	32	65‡	1	240	210	+30
Kansas State Coll.	113	38	30	24	105§	1	311	230	+81
Michigan State Coll.	24	29	21	27	38*	4	143	105	+38
Montreal, Univ. of	19	10	7	7	0	0	43	39	+ 4
Ohio State Univ.	75	60	20	56	86*	7	304	278	+26
Ontario Vet. Coll.	63	61	32	47	0	0	203	184	+19
Penna., Univ. of	59	42	46	31	9	0	187	170	+17
Texas A. and M. Coll.	75	49	28	14	2	0	168	114	+54
Washington, S. C. of	26	50	35	15	0	0	126	138	—12
Totals (1935–36)	668	480	332	330	369	19	2198	1866	+332
Last year	572	307	309	380	276	22	1866	1550‖	+316

* Pre-veterinary students.

† New York State Veterinary College at Cornell University does not include pre-veterinary Students in enrolment figures.

‡ Includes 63 pre-veterinary students.

§ Includes 87 pre-veterinary students.

‖ Total number of students for 1933–34.

these colleges, with the exception of Cornell University, the pre-veterinary students are either registered as such, or it is possible to determine the number with a fair degree of accuracy.

Pennsylvania has announced that a year of pre-veterinary work will be required of all veterinary students entering the institution next year. Alabama, Montreal, Ontario, Texas and Washington continue on the old four-year basis. It will be noted that several of the four-year schools report unusually large freshmen classes this year. From what we know of the situation in some of these institutions, it would be perfectly in order to ask how they expect to take care of such a large number of students adequately.

The increase in the number of students in some of our veterinary colleges has become such a serious problem that definite steps have been taken to limit the

enrolment of students. Very rigid selection is practised by some institutions. Dean Hagan reports that 166 prospective students applied for admission to the New York State Veterinary College this fall, and only 39 of these were accepted. Dean Giltner reports that a large number of applicants were declined admission to Michigan State College this year, as the institution can accommodate only a limited number of veterinary students. Right here it would be in order to direct attention to the fact that the four classes at East Lansing are unusually well balanced as far as the number of students in each class is concerned.

Dean Brumley, speaking of the situation at Ohio State University, reports that the College of Veterinary Medicine is using a method of selecting students similar to that employed by the College of Medicine, and by another year this system will be in complete operation, so that it will be possible to control the number of students matriculating in the College of Veterinary Medicine. Pennsylvania has been doing substantially the same thing for several years, as the School of Veterinary Medicine can accommodate only about 50 students in each of the four classes.

Kansas, with 113 freshmen and 87 pre-veterinary students this fall, has found it necessary to take steps toward limiting the enrolment of veterinary students, and the State Board of Regents, at its session on October 18th, adopted a resolution having for its purpose the limiting of the enrolment of veterinary students to 200, the number that can be cared for adequately by the institution with its present veterinary personnel, buildings and equipment. Students from Kansas are to be given the preference over students from other states, and students from other states not maintaining veterinary colleges are to be given second preference. In the selection of veterinary students entering the Manhattan institution, scholarship and other evidences of fitness are to be made the basis for admission.

Ever since Iowa State College adopted the five-year curriculum, it has been necessary for the institution to restrict the enrolment of veterinary students to a certain degree, preference being given to residents of Iowa over those of other states. As is the case with practically every one of our veterinary colleges, the one at Ames can give adequate instruction to only a limited number of veterinary students. It is reported that the Ontario Veterinary College has found it necessary to place some restrictions on students entering the institution, preference being given to Canadian students over those from the United States and other countries.

The physical limitations of our veterinary colleges for handling students is not necessarily the only consideration to be given to the subject. Of equal importance is the question of limiting the number of graduates to the number of veterinarians that can be absorbed by the profession each year, without unnecessarily crowding it. It is estimated that there are 25 per cent. more physicians in the United States than are actually needed at the present time. On the other hand, it has become pretty generally known throughout educational circles that the veterinary profession is about the only one of the various professions

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that is not overcrowded. This fact seems not to have been generally appreciated until recently. The increase in the number of students now applying for admission to our veterinary colleges is the perfectly logical sequel.

In any discussion of the subject of veterinary education, it would be perfectly in order to point out that as far as the profession as a whole is concerned, the full benefit of restricting enrolment in some of our veterinary colleges is not going to be realised as long as the other institutions welcome with open arms many of those who are declined admission by the colleges having more stringent entrance requirements.

FOWL PARALYSIS : AN ANALYSIS OF ONE THOUSAND CASES.*

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THE following statistical investigation was undertaken with a view to establishing certain points of the gross morbid anatomy and pathogenesis of fowl paralysis as unequivocally as possible. We propose to confine ourselves to the facts obtained from this analysis and the deductions which may be drawn from them ; we shall not discuss the nature of the causal agent or the field aspect of the disease.

The material upon which this analysis is based consists of 8,139 autopsy reports covering a period of twelve months from July, 1934, to June, 1935, inclusive, the examinations having been carried out in the post-mortem department of this laboratory upon birds which were sent to us for diagnosis. During this

TABLE I.—GENERAL ANALYSIS.
(*See* Fig. 1).

Total number of autopsies performed in the laboratory during the 12-month period	8,139
Number of cases referred to the Research Department	1,477
Number of histologically verified cases of fowl paralysis :	
(*a*) With full autopsy data	671
(*b*) Without full autopsy data	156
Total	827
Unverified cases of fowl paralysis	90
Lymphoma simplex	100
Total cases of fowl paralysis group	1,017
	Per cent.
Incidence of histologically verified cases of fowl paralysis coming to the laboratories	10.13
Incidence of all cases of the fowl paralysis group of diseases	12.45
Incidence of Lymphoma simplex	1.22
Incidence of unverified cases	1.08

* From the Poultry Pathological Research Laboratories, Goring, Oxon.

period a considerable number of birds were artificially inoculated with infective emulsions or filtrates and subsequently developed the disease. No essential differences could be detected between the natural history, morbid anatomy or histo-pathology of the naturally occurring and the artificially induced conditions, but in order that our results should represent the disease as it is met with under normal conditions, all such experimental cases have been rigidly excluded.

Of these 8,139 autopsies, 1,477 were referred to the Research Department for further histological or experimental investigation, 827 cases being subsequently

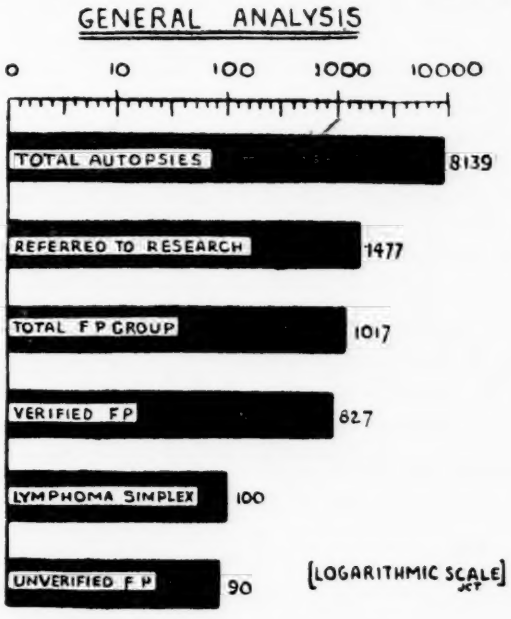

FIG. 1.

histologically verified as true fowl paralysis with neural lesions. The full autopsy reports were available in the majority of cases together with the details of the histological examination, but in certain cases only the latter were available (Table I). The incidence of histologically verified fowl paralysis was 10.13 per cent. of the total autopsies. Ninety cases were diagnosed as fowl paralysis at autopsy, but were not verified histologically, while in 100 cases the characteristic lymphomata were demonstrated without macroscopic or microscopic evidence of nerve infiltration. Such cases have been designated as "lymphoma simplex." The incidence of the whole group of fowl paralysis and the allied conditions is thus 12.45 per cent. The main bulk of this paper represents the detailed analysis of 671 cases which were histologically verified and of which the full autopsy reports were available.

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Monthly Incidence.

It was found impossible to determine the age of all the birds under consideration, but an investigation of the monthly incidence of the disease compared with the monthly incidence of autopsies confirms the impression gained from the post-mortem room that practically all the birds were between four and eight months old.

The total number of autopsies performed each month (Fig. 2) rises steadily from December to an April peak, after which it falls rapidly and is at its lowest in the latter part of the summer and the early autumn, the peak being accounted

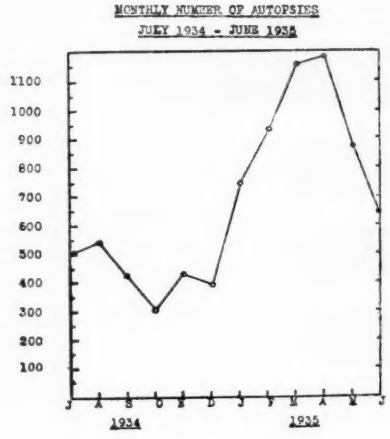

FIG. 2.

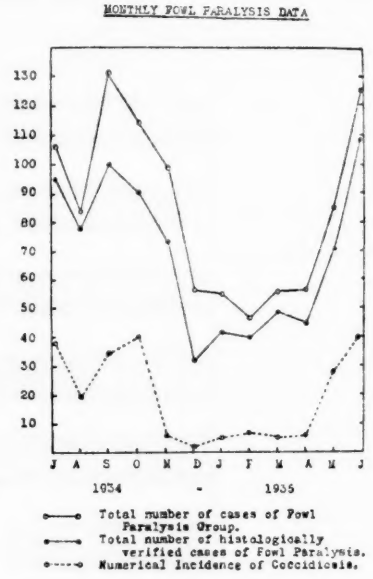

FIG. 3.

for by the relatively large number of chicks (pullorum infection, etc.) in the spring. The monthly variations of the fowl paralysis group (Fig. 3) show a similar yearly peak, save that its time relationship is diametrically opposed to that of the total autopsies occurring in the summer and early autumn when the latter are at their lowest. This peak represents the four to eight months old birds from the January to March hatchings. In view of the fact that we are dealing with two sets of variables, a monthly percentage incidence of fowl paralysis is of no value, and we have necessarily to consider the absolute totals of each month as an index of the prevalence of the disease.

The incidence of fowl paralysis is fairly low and steady in the early months of the year; it commences to rise in the early summer months, May and June,

reaching its highest peak in September. From then onwards it falls gradually until the end of the year. This is in accordance with the previous observations of this laboratory and of other authorities.

TABLE II.—MONTHLY INCIDENCE OF FOWL PARALYSIS.

1934	Total Autopsies	Total F.P.	H.V. F.P.	1935	Total Autopsies	Total F.P.	H.V. F.P.
July	503	106	95	January ...	758	55	42
August ...	540	83	78	February ...	930	47	40
September ...	425	131	100	March	1153	56	49
October ...	395	114	91	April	1173	57	45
November ...	434	99	73	May	873	84	71
December ...	392	57	32	June	653	126	109

F.P. = Fowl Paralysis. H.V. = Histologically verified.

Breed Incidence.

The breed data was available in 623 adult cases. There were 31 birds classified as "chicks" irrespective of breed, the term "chick" implying a bird under three months old. No really significant difference or fluctuation could be determined among the various breeds. The apparently high incidence of the disease among Rhode Island Reds is probably an artefact, as they are the predominant rearing breed in this country. The number of chicks was significantly high in March (34 per cent. of the verified cases), representing the earliest acute phase of the disease in birds under three months old from the early year hatchings. Of the miscellaneous breeds, the fact that the condition was recorded in only one bantam is worthy of note. We have repeatedly demonstrated this apparent resistance of bantams in field studies. The various crosses have been grouped together, both straight and sex-linked, the majority of them containing a Rhode factor.

TABLE III—BREED INCIDENCE.

Breed	Cases	Percentage incidence
Rhode Island Red...	271	43·5
White Wyandotte...	102	16.4
White Leghorn	87	13.9
Light Sussex	26	4.1
Barred Rock	9	1.4
Buff Orpington	8	1.3
Cross breeds	113	18.1
Chicks (under three months) ...	31	4·7
Miscellaneous breeds	7	1.1

Weight.

Weight data was available in 636 cases. Of these, 349 were under normal weight (55 per cent.), while nearly 20 per cent. were extremely emaciated. Less than 5 per cent. were classed as over weight. This loss of weight represents a malnutrition following the establishment of the disease. The bird is

TABLE IV.—WEIGHT.

Fat	31	
Normal	256	
Thin	229	349 = 55 per cent.
Emaciated	120	

either unable to obtain its food by reason of the actual paralysis, or its intestinal function is so far deranged that normal absorption is no longer possible (*vide infra*).

Eye Signs.

The incidence of the ocular type of the disease was low. Depigmentation of the iris, distortion and irregularity of the pupils and iritis were demonstrated in 63 of the histologically verified cases. At the same time there was a very much higher incidence of this type of lesion among the unverified cases. This is attributable to the difficulty of demonstrating the typical lymphocytic infiltration in the histological picture of the optic nerves in these cases, even when depigmentation and iritis are well marked. It is probable that a routine examination of the eye itself with the demonstration of the lymphocytic infiltration of the cornea, intraocular muscle, iris and ciliary body would be of much more value than the examination of the optic nerve and would have led to the demonstration of the lesions in many of our unverified cases. The lesions of the eye represent a primary pathological process and are not of necessity secondary to lesions of the optic nerve. We have so far confined ourselves to the examination of the nerve alone, but propose to include an examination of the eye in our future routine. In our experience, however, the purely ocular type of the disease is not very common, eye lesions being present, even if one takes the unverified cases into consideration, in only 12 per cent. of cases.

TABLE V.—EYE SIGNS.

Iritis, etc., in :	Cases	Percentage
Verified cases	63	9.4
Unverified cases	44	49.9
Total cases	107	12.9

The Digestive Tract.

(1) *Intestinal Tone.*—In view of the many ætiological rôles which have been assigned to the intestine and its varying adventitious inhabitants, notably the coccidia and the small tapeworm (*Davainea proglottina*), particular attention is paid to these points in all autopsies performed in these laboratories. The commonest pathological condition found at necropsy was an atonic intestine, loose and distended with fermenting material and exhibiting poor or absent peristalsis, in those birds which were killed for autopsy. This atonicity of the intestinal musculature was demonstrated in 198 cases (29.5 per cent.).

(2) *Enteritis.*—A frankly declared enteritis was present in 124 of these 198 birds (18.4 per cent. of the total cases, 61.8 per cent. of the atonic cases), from which it is apparent that a simple loss of tone may often be present without any inflammatory process. Moreover, it is often present in birds which are free from coccidia. This data serves to emphasise the little we do know of the portal of entry of the infective agent into the body of the fowl. It has previously been contended that the mucosa of the intestine, vitiated and rendered atonic by a toxic enteritis or the mechanical damage of a coccidial or worm infestation, allowed

the infective agent to reach the mesenteric nerve end-plates in the muscularis, and thus resulted in a centripetal, neurotropic spread. Our evidence is directly opposed to this view. Many cases show no lesions of the mesenteric nerve; many cases have no disturbance of intestinal tone or function, and of those which do, at least two out of five have no added inflammatory process. We consider that the neural lesion stands in causal relationship to the intestinal lesion, a contention which is adequately borne out by this analysis.

(3) *Coccidiosis.*—Coccidia were demonstrated in 228 birds (33.9 per cent.) in spite of a detailed microscopic search in all cases. This low figure immediately precludes coccidia from any ætiological relationship to the disease. The monthly incidence of coccidiosis (Fig. 3) is roughly parallel to the incidence curve of the disease itself, with the important difference that the coccidiosis peak is a month after the peak of the fowl paralysis group.

A consideration of the quarterly number of cases of loss of intestinal tone, enteritis and coccidiosis adds weight to the contention that the disturbances of the normal physiology of the intestine are secondary manifestations of the disease and are not causal.

TABLE VI.—QUARTERLY INCIDENCE OF COCCIDIOSIS, ENTERITIS, ETC.

	July–September	October–December	January–March	April–June
Total F.P. group	320	261	158	266
H.V.F.P.	195	177	99	200
Atonic intestine	49	28	43	98
Enteritis	34	49	17	24
Coccidiosis	92	46	16	74
No. of birds with worm infestations	118	80	37	115

Coccidiosis and enteritis form numerically equal groups during the fourth and first quarters, and during these months might well be inter-related in the relatively small number of cases in which they occur. During the summer half of the year, however, no such relationship is demonstrable, and the monthly incidence of enteritis is greatly in favour of its being a secondary manifestation. The quarterly incidence of coccidiosis is parallel to that in non-paralysed birds. A sequela must, by definition, develop after the primary disease is established, and if the presence of coccidia and an enteritis are secondary processes, then their incidence will be higher in the months immediately following the maximum incidence of fowl paralysis. Moreover, the demonstration of such a fact implies that they are sequelæ and immediately precludes their being causal. The maximum incidence of both enteritis and coccidiosis was in October, a month after the fowl paralysis peak, and 54 per cent. of all cases of enteritis occurred in the four months from September to December.

The causal theory of coccidiosis and intestinal dysfunction is therefore no longer tenable, and we are of the opinion that such lesions are always secondary to the establishment of the disease, that is, they follow an infiltration or degeneration of the mesenteric nerve or its central connections, with a resulting loss of

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function and intestinal tone. An atonic gut is an ideal breeding ground for bacteria as well as for the various parasites and protozoa, with the result that an inflammation of the devitalised tissues and coccidial infestation may follow rapidly. The incidence of coccidiosis in birds with fowl paralysis is probably but little more than in birds without fowl paralysis, depending simply upon the fact that the atonic gut is an ideal medium for their continuance and propagation. Only a small percentage of birds which ingest coccidia develop a declared coccidiosis, their physiological resistance being sufficiently high to eliminate them ; this is probably also true of those birds with fowl paralysis in which the peripheral motor system alone is affected, and in which the incidence of coccidia closely approximates that of normal birds. The reverse holds true for cases of fowl paralysis in which the intestine is affected. These birds have little or no resistance, and during the months in which coccidia are prevalent then coccidiosis is an almost inevitable sequela of the disease.

(4) *Parasitical Infestations.*—We have so far discussed the relationship of coccidia only, and have found no evidence that they may be considered as causal. The same may be said of the various other parasites which were found, and which were all present less constantly even than coccidia. The statement that *Davainea proglottina* and *Capillaria annulata* play a part in the production of the disease receives no support, these parasites being found in only 48 and 87 cases respectively.

In all, 362 birds were infested with either coccidia, worms, or both. This represents just over a half of all the cases (52.1 per cent.). A triple infestation was demonstrated in four cases (0.6 per cent.), a double infestation in 32 cases (4.8 per cent.), and a single in the remaining 326 cases. Thus the total number of infestations was 402 in 362 birds. The details of the various parasites are given in the following table :

TABLE VII.—PARASITICAL INFESTATIONS.

Parasite	Cases	Percentage
Ascaris inflexa	39	5.8
Capillaria annulata	87	12.9
Davainea proglottina	48	7.1
Tænia infundibuliformis	10	1.5
Heterakis papillosa	1	0.15

Nerve Involvement.

It is unfortunate that the data concerning the condition of the brain and spinal cord in these cases is inadequate ; these parts were not examined in all cases, and it has been impossible to determine those cases in which such an examination was made. The examination of the central nervous system is undoubtedly as important as that of the peripheral nerves, and in a number of cases will reveal the presence of early perivascular cuffing and lymphocytic infiltration when no other lesions can be found at autopsy to account for the birds' condition. Injection of the spinal meninges, notably the pia in the lumbo-sacral region of

the cord, together with degeneration, was reported in 67 cases, and macroscopic brain lesions in 22 cases. These figures can, however, be taken as in no way representing the true incidence of these lesions, which is undoubtedly very much higher. Gross enlargement of the dermic nerves was reported in three cases.

Two points of interest follow this analysis: the first, that there is a very low incidence of optic nerve involvement, a point which has already been referred

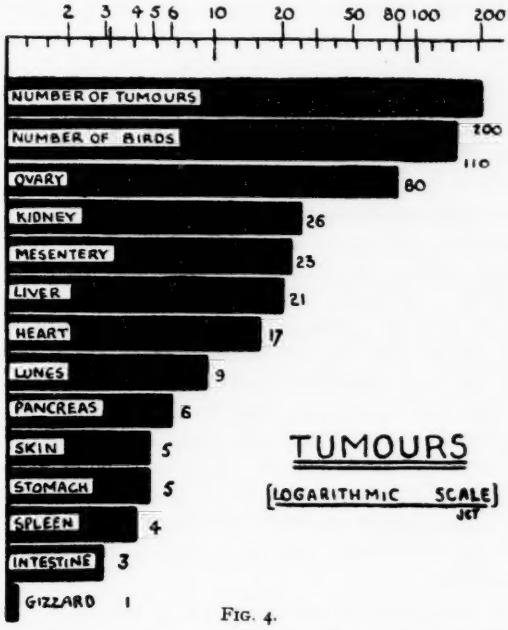

FIG. 4.

to in connection with the eye signs, and the second, the close numerical relationship between mesenteric nerve enlargement and intestinal disorders (138–124). The brachial and sciatic plexuses were about equally affected (356–340), and no difference could be detected between the sides which were involved. It is an obvious point that histological examination of both the brachial and sciatic plexuses is very necessary, while such an examination of the optic nerve will be of doubtful value.

TABLE VIII.—NERVE INVOLVEMENT.

Nerve	Cases	Percentage	Right	Left
Femoral	156	10.10	118	123
Lumbar	161	10.40	130	129
Sciatic	340	22.02	249	246
Brachial	356	23.05	281	298
Costal	180	11.64	—	—
Vagus	68	4.40	—	—
Mesenteric	138	8.93	—	—
Abdominal sympathetic ...	117	7.63	—	—
Optic	28	1.81	—	—

Tumour Formation.

Two hundred histologically-verified lymphomata were found in 116 birds with neural lesions, and similar tumours were demonstrated in a further 100 birds which were macroscopically and microscopically free from any other signs of the disease. This represents a tumour incidence of 17.2 per cent., which is of the same order as that of other observers. The ovary was most commonly affected (80 cases) and tumours were demonstrated in most of the major organs of the body (Fig. 4).

The impression which we have gained in this laboratory is that the incidence of lymphomata is diminishing, more especially of those cases in which no nerve lesions are demonstrable. We hope to be able to support this contention by an analysis of the autopsy reports of previous years.

Concurrent Diseases.

With the exception of parasitical infestations, the presence of which we have shown is to be regarded as a secondary manifestation of the disease rather than a concurrent clinical entity, very few other diseases were recorded in conjunction with fowl paralysis in our series. In 11 cases acute pulmonary conditions were terminal, while in two cases peritonitis following a perforation of a nail was the cause of death. Fifteen other tumours were recorded, the majority being sarcomata. We have no evidence that any of our birds were affected with Furth's Strain 2 lymphomatosis virus, with the possible exception of one case which showed a myelosis and a concomitant nerve infiltration. We have often noticed the presence of multiple, small, pale, hard nodular tumours in the intestine and cæca. It was originally thought from the histological picture that these were fibro-adenomata, but further investigation suggests that they represent areas of fibrous tissue hyperplasia with a few mucosal inclusions occurring in response to damage by coccidia.

TABLE IX.—CONCURRENT DISEASES.

Condition	Cases
Sarcoma, round or spindle-celled	10
Sarcoma, Fibro-	3
Acute pulmonary conditions ...	8
Laryngo-tracheitis	3
Perforated gastric ulcer	2
Fibroadenoma of intestine	1
Bacillary white diarrhœa	1
Erythro-leucosis	1
Myelosis (? Strain 2 virus infection)	1
Hæmangioma...	1

Routine histological examination of material from birds which at autopsy appeared normal revealed the presence of the disease in 46 cases (6.8 per cent.). It is essential that a histological examination be performed in all suspected cases, and preferably, as in this laboratory, in all cases of all diseases as a routine if an accurate diagnosis is to be expected.

Eleven cases were inadequately reported as showing " enlargement of various nerves," and have not been included in this analysis.

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Summary.

Out of 8,139 autopsies carried out in the twelve-month period under review, 1,017 were classified under the fowl paralysis group (12.45 per cent.); 827 were histologically verified as true fowl paralysis (10.13 per cent.). The monthly incidence of the disease is highest in the summer, *i.e.*, when the current year birds are coming into lay. The peak incidence is in September. In March, 34 per cent. of the affected birds were under three months old.

The incidence of the ocular type of the disease was found to be low, irregularity of the iris and pupil being demonstrated in only 63 of the verified cases (7.6 per cent.), and in 107 of all cases (12.9 per cent.). It is suggested that the histological examination of the eye itself would be of more value than that of the optic nerve alone. Atonicity of the small intestine was noted in 198 cases (29.5 per cent.), of which 124 showed a declared enteritis. Marked loss of weight was noted in 55 per cent. of the birds. The causal theory of coccidiosis and intestinal dysfunction is no longer tenable, and we have presented evidence that such conditions are to be regarded as secondary manifestations of the established disease. There is no evidence that parasitical infestations play any ætiological rôle.

The brachial and sciatic plexuses showed a higher incidence of lymphoid infiltration than the other nerve centres, accounting for a combined percentage of 45.07 per cent. of all nerve involvements. No difference was noted between the sides affected. The optic nerve was only infiltrated in 1.81 per cent. of cases. Two hundred lymphomata were present in 116 birds with neural lesions (17.2 per cent.), and in 100 birds without any other evidence of the disease. It is suggested that the latter type of lesion is decreasing.

Very few concomitant diseases were present with the exception of secondary parasitical infestations. One case only corresponded to the Strain 2 virus infection (Furth). 6.8 per cent. of the verified cases appeared normal at autopsy, the diagnosis being made upon routine histological examination. Thus an apparently normal nerve does not necessarily imply the absence of fowl paralysis nor an enlarged nerve its presence. A definite standardisation of post-mortem technique and histological diagnosis is completely necessary, and in our judgment should include :

(*a*) Histological examination of the eye, brain, lumbo-sacral cord, brachial and sciatic plexuses, and the autonomic nervous system whether macroscopically infiltrated or not, together with any other infiltrated nerves. Some method of identification of the nerves during section is desirable.

(*b*) Histological examination of any tumours which may be present.

(*c*) Cytological examination of the blood.

(*d*) Reasonable clinical notes of the birds' condition and environment.

In order to facilitate research into this disease we earnestly appeal to laboratories connected with avian pathology to confer with a veiw to arriving at such standardisation.

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Investigators should seriously consider that fowl paralysis is a separate clinical and pathological entity which may appear as one of several differing types (Oakley, 1935), and, if present, is most probably primary and of greater economic importance, other pathological changes being merely secondary. The diagnosis of coccidiosis in the presence of fowl paralysis is misleading, not only to other pathologists, but also to the practical poultryman, who is, above all things, concerned with whether he has fowl paralysis in his stock or not.

The final analysis of our results has been done during the early months of the tenure by one of us (J. C. T.) of the Graham Scholarship in Pathology at University College Hospital Medical School, London.

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Notes from the Press

BEDS AGRICULTURAL COMMITTEE—FULL-TIME VETERINARY OFFICIALS.

AT an Agricultural Committee's meeting at Bedford there was considerable discussion on the proposal by the Special Joint Sub-Committee and Diseases of Animals Sub-Committee for full-time veterinary officers instead of the services of part-time men. The resolution for a full-time staff was moved by Alderman Brown, who said the cost would be £2,100 per annum against £2,262 14*s*. with the local veterinary service. Mr. Wallace moved an amendment that the present system be retained, and argued that it was efficient, could be improved, and that it was unfair to turn off those who had served them well and replace them with new and untried men. Mr. Kilby, who seconded the amendment, said Mr. Brown had drawn a beautiful picture of the blessings that would accrue, but he was not satisfied that when once a new department was established the cost would not exceed the sum named. More clerks and more rooms would be required. Mr. Brown referred to the economy by centralisation. He (Mr. Kilby) had never known it in practice. Mr. Gardener and Mr. Dalton supported the resolution and Mr. Gadsden the amendment. On being put to the vote the amendment was carried by nine votes to five.—*Leighton Buzzard Observer.*

NEW VETERINARY INSPECTOR—£700 A YEAR POST IN GLOUCESTERSHIRE.

GLOUCESTERSHIRE County Council, at a special meeting held recently, approved the appointment of a whole-time veterinary inspector at a salary of £700 a year. The resolution, which came from the Diseases of Animals Sub-Committee of the Agricultural Committee, stated that as soon as he took office the mode in which the veterinary inspection of the county should be carried on should be considered, and in particular to what extent, if any, the assistance of part-time veterinary inspectors should be retained.

Submitting the resolution, Mr. Gilbert McIlquham remarked that Gloucestershire was a pioneer county in the matter of the inspection of dairy herds, and they had

carried on until now with part-time veterinary officers, and were grateful for the assistance they had received from those officers at a time when neither Government nor public opinion took the interest in those matters that they did to-day.

Several things would have to be considered, including full-time assistants, and whether they would allow the inspection of markets to remain for a time in the hands of part-time officers. The matter had not passed beyond the initial stage, and in other counties there was wide divergence of opinion in the way they thought best to run that particular business.

VERY OPTIMISTIC.

He did not know whether they ought to have three or four assistant officers, but immediately they got a whole-time inspector no time would be lost in proceeding with the scheme and reporting to the council.

Mr. Stamford Hutton spoke of Gloucester Market, and asked if there was a full-time inspector. He said that was out of the jurisdiction of the county council.

Mr. McIlquham, replying, wondered whether there could not be greater co-operation between that important market and the rest of the county.

Mr. A. H. Chew supported the proposition in regard to the new appointment for the present time, but he thought there should be a new scheme which would not call upon the county to find the additional sum of £700 a year.

Mr. R. G. Hanks spoke in support of the resolution, and said Mr. Chew was very optimistic to think rearrangement would cost no more money. It was desirable to appoint a chief veterinary officer and then take such further steps as were thought necessary. Inspection of all the markets in the county would be an expensive matter, and under the supervision of the new officer the present arrangement could be continued.

Capt. J. H. Trye (Cheltenham) remarked it would appear that the new man was just going to be a supervising officer.

Mr. A. W. Martyn (Charlton Kings) said it did seem the scheme was not mature yet. Apparently a man was to be chosen to tell the county what to do.

Major Brooke-Murray (Cheltenham) said he thought the matter had been sprung on them, and suggested it should go back.

Sir Frederick Cripps, the Chairman, stated it was his opinion that they should have a whole-time veterinary officer to advise, and he was in agreement with the resolution.

The recommendation was carried.—*Gloucestershire Echo.*

VETERINARY STAFF FOR SHROPSHIRE: COUNTY COUNCIL'S ACTION.

SALOP County Council at a recent meeting set up a sub-committee to consider fully the expediency of providing an adequate veterinary staff for the periodical veterinary inspection of all dairy herds in the County under the Milk and Dairies Order. The sub-committee will report to the next meeting of the Finance and General Purposes Committee, who will make recommendations to the next meeting of the County Council. The question was referred to in the report of the Public Health and Housing Committee, who stated they had considered, at the request of the Joint Sub-committee, the desirability of carrying out the periodical veterinary inspection of all dairy herds in the county. Various powers conferred upon county councils with the object of securing by veterinary inspection the detection and eradication of bovine tuberculosis, and the risk of infection of human beings through the medium of milk, had been reviewed.

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The object of routine veterinary inspection was to secure removal from the herds of unhealthy and infectious animals sooner than would be the case if it were left to the farmer and others to report them under the Tuberculosis Order. The cost of carrying it out would be considerable.

The Committee sent a recommendation to the Finance Committee stating they were of the opinion the periodical veterinary inspection of all dairy herds in the county was desirable in the interests of public health and a pure milk supply, and recommended the Finance Committee to consider the expediency of providing an adequate veterinary staff for the purpose. While making no definite recommendations, they suggested for consideration that a small income to offset the cost of the veterinary service as a whole might be obtained by charging a small fee for the quarterly veterinary examination of " grade A " herds.

The Finance Committee recommended the appointment of a sub-committee to consider the matter in conjunction with reports by the County Medical Officer of Health and the Chief Veterinary Officer.

" I appeal to this committee to keep in front of them the whole time the question of the supply of milk to the people in our villages," said Mr. A. Roland Clegg.

Tuberculous Cows Dumped in Shropshire.

Mr. J. Tudor said tuberculous cows were being dumped into this county from counties that had a full-time veterinary staff. If Shropshire was going to be made the dumping ground for rejected cows from other counties it was going to be a serious thing. He described the suggested charge for inspection of " grade A " herds as unreasonable.

" We want to get on with it and get something done," said Mr. G. B. Kempster, who agreed that Shropshire was at present the dumping ground for T.B. cows.

Mr. T. C. Ward, a member of the proposed sub-committee, said he was fully alive to the position that existed through counties adopting the scheme, while Shropshire had not. In his opinion the whole thing should be dealt with nationally. They would never eradicate T.B. unless they dealt with it nationally, and the expense of dealing with it should be a national expense. "It is totally unfair that a big producing county like Shropshire," he said, " should have to bear the whole expense of eradicating T.B. It is for the benefit of the public, and the public should contribute to the eradication of T.B. The big consuming centres should contribute through the Exchequer."

" I entirely agree with Mr. Ward," said Mr. William Everall.

" It is appalling to me that after all these years we have been trying to fight tuberculosis we should be threatened with an increased number of T.B. infected cattle coming into our county to provide tuberculous milk for our children," said Dr. Hollies. " Because of the prospect of this payment we are asked to delay, or not to act too energetically. We are told it can be done only nationally. How absurd. We have the power to do something in our own county ; we have not the power to compel the whole nation. We ought to do something, and do it soon. If you wipe out tuberculosis in your cattle we can practically assure you that you will not have bovine tuberculosis in your children."

Mr. H. Hand and Capt. Needham urged co-operation with the veterinary surgeons already in the county.

Mr. E. C. Pryce asked who were the farmers in Shropshire who were buying tuberculous cows and bringing them into the county.

The reports were adopted, and the sub-committee appointed.—*Shrewsbury Chronicle.*

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Obituary

DEATH OF DR. GRIFFITH EVANS—CENTENARIAN.

THE profession will read with deep regret of the death of the " Father of the Profession," Dr. Griffith Evans, who was in his 101st year.

It will be remembered that on his one hundredth birthday he received (as recorded in THE VETERINARY JOURNAL of August, 1935) many congratulations, including in addition to those of his own family, messages from Their Majesties the King and Queen, His Royal Highness the Prince of Wales, many scientific bodies, and a small token (which gave him intense pleasure) in the shape of an illuminated scroll, signed by His Royal Highness the Duke of Gloucester and the Principal of the Royal Veterinary College, framed in a piece of the original wood of the old College which has now been pulled down, in which he was a student some eighty years ago. He maintained his vitality almost to the last, and was indeed a wonderful man in more ways than one. Dr. Griffith Evans graduated from the Royal Veterinary College, London, in 1855, and was appointed veterinary officer to an artillery regiment, where his duties took him to Burmah ; and it was there that he made the pioneer discovery of living parasites in the blood stream ; his patients being horses and camels which were suffering from surra. His work was some years afterwards applied by Dr. David Bruce to the detection of the cause of malaria in human beings, and, although very tardily, medical science subsequently gave the original credit to Lieut.-Colonel Evans, to whom it was due. A summary of the life of this remarkable man is given in THE VETERINARY JOURNAL for last August.

Personal

CONGRATULATIONS to Mr. Rowland Glave Saunders, M.R.C.V S., on being elected as Sheriff of Exeter. It is an honour of which the profession is justly proud.

CONGRATULATIONS to Mr. Haydon Leggett, F.R.C.V.S., on his having recently passed his ninety-third birthday. Mr. Leggett graduated from the London College in 1865, and took his Fellowship degree in 1886.

MR. F. H. MANLEY, M.V.Sc., M.R.C.V.S., until recently the Chief Veterinary Officer for the Government of Cyprus, and formerly in Uganda and Nigeria, has been appointed as Chief Veterinary Officer for Staffordshire. It was for original work done whilst abroad on the immunisation against anthrax that the Liverpool University awarded the M.V.Sc. degree.

MR. GEORGE PICKERING, M.R.C.V.S., has been appointed Chief Veterinary Officer for the County of Northumberland. Mr. Pickering has for the past three years been Assistant Veterinary Inspector in East Sussex.

AT the recent prize giving ceremony at the Glasgow College, Mr. Alexander Murdoch, the Chairman of the Governors, stated that closer attention given nowadays by national and local authorities to the safeguarding of public health had created new openings for veterinary surgeons, and that graduates of the Glasgow College had no difficulty in securing suitable employment when they completed their courses. The

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number of students in 1925 was 80. To-day the college had 260 students, the highest number since the foundation of the college in 1860. The present students included 17 women. The prizes were presented by the Earl of Home.

Mr. George Reid Chalmers, Senior Assistant Veterinary Officer to the West Sussex County Council, has been appointed full-time Veterinary Officer to the Oxford County Council at a salary of £500 per annum, rising to £600.

By the death of Mr. John M'Clean at the age of 69, Belfast loses one of its most respected citizens and the Glasgow College one of its oldest graduates. His special study was cattle diseases, and his *clientèle* extended over a very wide distance in County Antrim and Northern Ireland.

THE WARBLE FLY PEST.

At a meeting recently held in London between representatives of the Ministry of Agriculture and Fisheries as regards Great Britain, the Ministry of Agriculture for Northern Ireland and the Department of Agriculture for the Irish Free State, agreement was reached, in principle, on the question of the desirability of the issue of an Order requiring compulsory periodical treatment of cattle infested with the warble-fly maggot, commencing in the spring of next year. It was also agreed that the draft of an Order to this effect should be submitted to respective Ministers for approval.

AN EDITORIAL ANNOUNCEMENT FOR 1936.

It is now thirty years since I took over the Editorship of The Veterinary Journal, and the time has come when others must help in the responsibility of carrying on the work which is done by this—the oldest British journal of its kind. To my loyal colleague and personal friend, Mr. Gladstone Mayall, who will still occupy the Sub-Editor's chair, I take the opportunity to offer my expression of deepest gratitude ; and the staff will be strengthened by the addition of a number of collaborators whose names will, I am sure, when announced, be received with approbation by our readers.

Frederick T. G. Hobday,
Editor.

Publishers' Notices

All communications should be addressed to 7 & 8, Henrietta Street, Covent Garden, London, W.C. 2. Telephone : Temple Bar 8568. Telegrams : "Baillière Phone, London."

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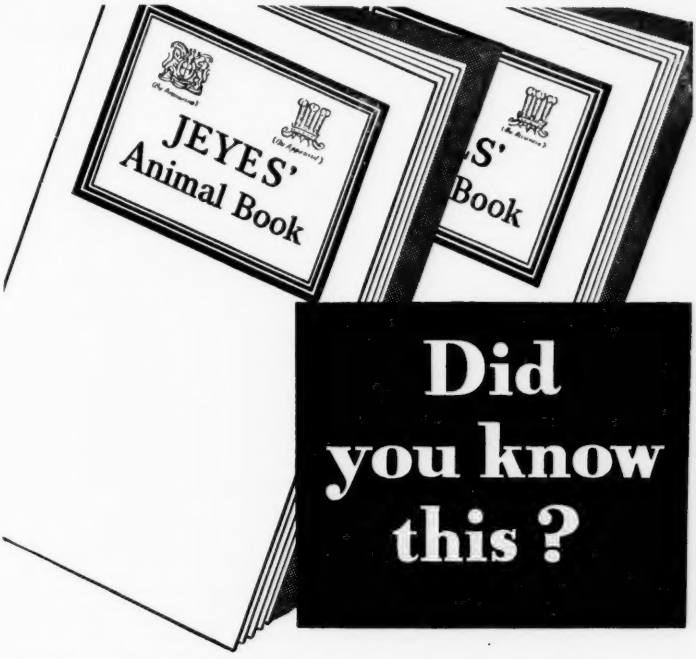

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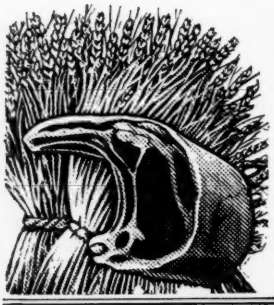

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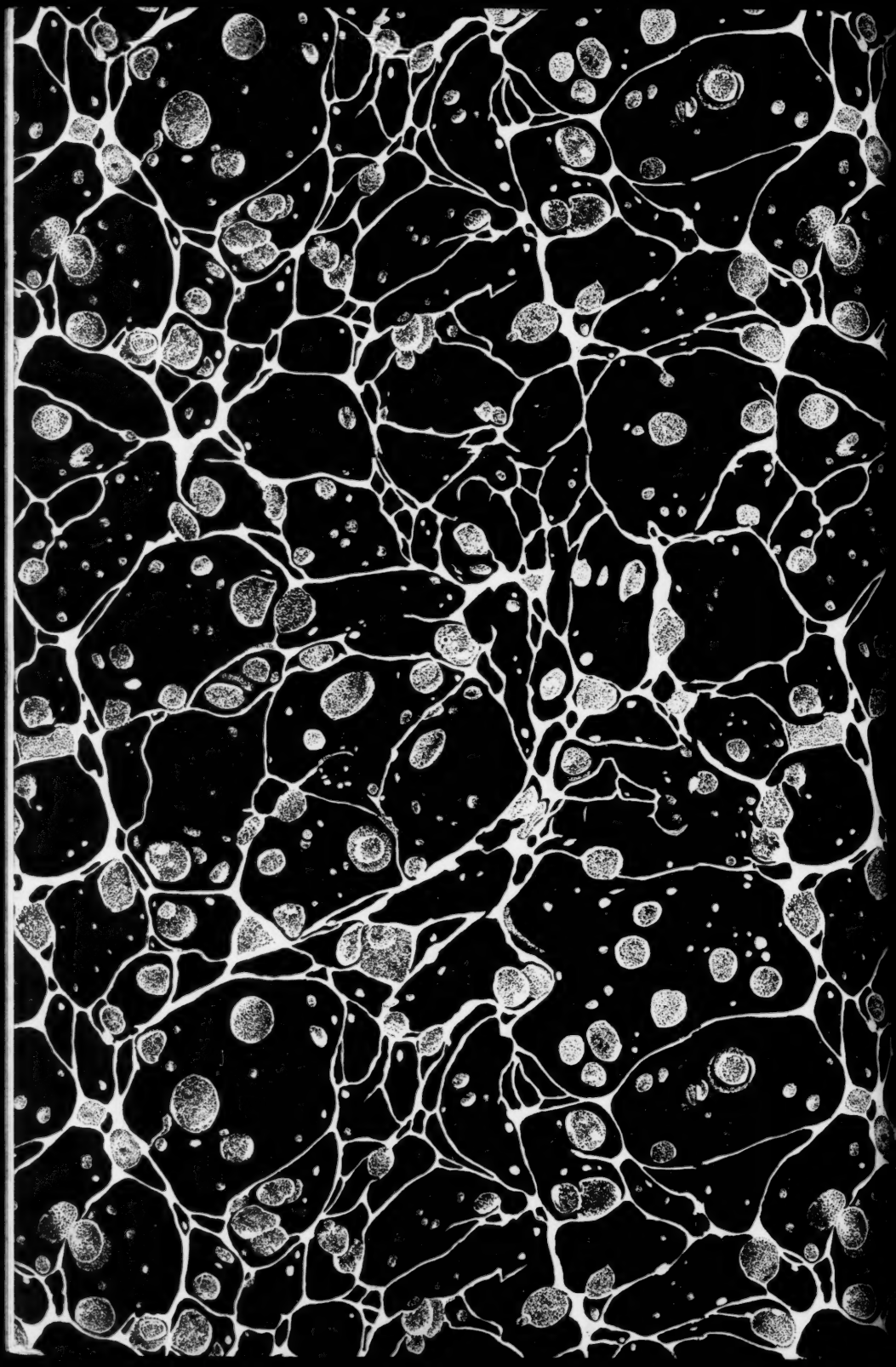

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